

WATER QUALITY RULES, TRIENNIAL REVIEW and RELATED TOPICS

From the meeting held on June 24, 2002, a number of key issues were discussed. IDEM staff has prepared a succinct summary of each of the following topics:

I. Antidegradation/OSRW

A. Concise Issue Description: Exceptional Use Waters and OSRWs

The proposed antidegradation policy is for new or increased discharges in situations where the water body is “high quality” for the pollutant parameter proposed to be increased. (“High quality” means that the actual water quality is better than that required by the criterion.)

The rules must include: a definition of “significant lowering of water quality” to include a de minimis quantity of pollutant load below which antidegradation procedures do not apply; procedures to implement a water quality project in the OSRW watershed or pay a fee into an OSRW improvement fund; and, criteria for submission and approval of watershed improvement projects.

In addition to the three federally mandated tiers, Indiana currently has two additional types of “high quality” waters: Exceptional Use waters and Outstanding State Resource Waters (OSRWs). These waters represent essentially the same type of waters, but have historically been called by different names. It would seem appropriate to combine these into one type of water (i.e., Outstanding State Resource Water) and provide an additional antidegradation “Tier” (i.e., Tier 2.9) in our antidegradation policy. EPA has approved states having an additional “Tier” to incorporate Outstanding State Resource Waters that are not being proposed for an Outstanding National Resource Water classification. This would mean that Indiana would have four antidegradation “Tiers”.

Prior rulemaking attempts have had difficulty trying to reach compromises between different stakeholder groups concerning what qualifications would be needed for a water to be proposed as an Outstanding State Resource Water and what antidegradation requirements would apply to a water so designated. Some of the differences of opinion on these requirements have been removed due to SEA 431 which dictates some general criteria for proposing waters of this type and what requirements may be placed on them. Working within this framework may allow us to move forward with requirements and qualifications for this “Tier” of waters.

The Water Quality Advisory Group discussed how to determine if a water appropriately belongs in the Tier II antidegradation group and what procedures need to be followed to implement the requirements of that group of waters. The information in their report will be helpful in working out differences identified in the prior rulemaking attempts.

B. Applicable Rule Cite(s)

The Clean Water Act defines three classifications, or “tiers,” for the establishment of water quality standards. Tier 1 (40 CFR 131.12(a)(1)) protects existing uses by providing the absolute floor of water quality in all waters of the United States. Tier 2 (40 CFR 131.12(a)(2)) applies to waters whose quality exceeds that necessary to protect the section 101(a)(2) goals of the Act (criteria). In this case, water quality may not be lowered to less than the level necessary to fully protect the “fishable/swimmable” uses and other existing uses and may only be lowered after following all the provisions described in section 131.12(a)(2). Tier 3 (40 CFR 131.12(a)(3)) applies to ONRWs where the ordinary use classifications and supporting criteria may not be sufficient or appropriate. States may allow some limited activities which result in temporary and short-term changes in water quality but such changes in water quality should not impact existing uses or alter the essential character or special use that makes the water an ONRW.

Rules affected or potentially affected by an antidegradation policy are classified here as one of two types: 1) Directly affected by requiring the amendment of existing narrative/numeric standards or use designations to provide for antidegradation provisions; and 2) Indirectly affected by requiring the incorporation of references to antidegradation provisions contained in rules listed under (1) or other means of providing for antidegradation.

As the Indiana antidegradation policy is developed this list of rules potentially affected will most likely change as particular implementation provisions of the policy are finalized.

1. Rules directly affected

327 IAC 2-1 Water Quality Standards, non-Great Lakes
327 IAC 2-1.5 Water Quality Standards, Great Lakes
327 IAC 5-2 Basic NPDES requirements

2. Rules indirectly affected

327 IAC 3-2.1 Sanitary Sewer Construction
327 IAC 4 Bypass/Overloads
327 IAC 5-3 Procedure for issuance of NPDES permits
327 IAC 5-6 Fundamentally Different Factors (?)
327 IAC 5-13 Pretreatment
327 IAC 5-14 Revision of standards for POTWs after consistent removal
327 IAC 5-15 Industrial Waste Pretreatment
327 IAC 15-2 Basic NPDES General Permit Requirements
327 IAC 15-5 through (proposed)15-13 General Permits

C. Existing Guidance

Senate Enrolled Act 431 (a/k/a P.L. 140-2000) directs the Water Pollution Control Board to adopt rules that will prevent degradation as defined by SEA 431 and allow for increases and additions in pollutant loadings from an existing or new discharge.

SEA 431 defines degradation with respect to an NPDES permit for (1) outstanding state resource waters (OSRWs), (2) exceptional use waters, and (3) outstanding national resource waters (ONRWs). For an ONRW, degradation means any new or increased discharge of a pollutant, except for a short-term, temporary increase. For an OSRW or exceptional use water, degradation means any new or increased discharge of a pollutant that results in a significant lowering of water quality for that pollutant. A new or increased discharge may be allowed only if there will be an overall improvement in the water quality for the OSRW and the water quality and antidegradation standards provided by rule are met.

D. Point of Contact

Larry Wu and Denny Clark

II. Narrative and Numeric Criteria

A. General Narrative

1. Concise Issue Description

Narrative criteria are general narrative statements that describe the desired conditions a waterbody should attain. The narrative criteria provide general statements requiring that the water be free from substances in concentrations that cause toxic effects to aquatic life, human health or wildlife. They also limit the presence of substances that cause undesirable changes to the color or odor of the state's surface waters or cause the growth of undesirable algae or plants. Currently, Indiana has slightly different general narrative criteria for areas inside and outside the Great Lakes Basin.

2. Applicable Rule Cite(s)

327 IAC 2-1-6(a)
327 IAC 2-1.5-8

3. Existing Guidance

USEPA Water Quality Standards Handbook: Second Edition, 1994

4. Point of Contact

David Kallander

B. Biological Narrative

1. Concise Issue Description

Since the passage of the Clean Water Act in 1972 states have been developing and implementing chemically based water quality programs. However, it has become clear that this approach has limitations and a more comprehensive program is needed to address water quality problems. EPA has set a priority and is encouraging states to develop biological criteria to better protect the overall biological integrity of their surface waters. Biological criteria are numerical values or narrative statements that describe the expected biological integrity of aquatic communities inhabiting waters of a designated aquatic life use.

2. Applicable Rule Cite(s)

N/A

3. Existing Guidance

USEPA Water Quality Standards Handbook: Second Edition, 1994

4. Point of Contact

David Kallander

C. Sediment narrative

1. Concise Issue Description

At EPA's 1997 national meeting, EPA recommended that all states begin applying narrative standards to sediments during 1998. At the time EPA was exploring the idea of using numeric criteria to protect sediment dwelling organisms from pollutants that accumulate in sediments. EPA has since decided not to release numeric criteria but to instead develop sediment quality guidelines that can be used as screening values. States are encouraged to use their narrative criteria to prevent sediments from being contaminated to a point where they pose a threat to aquatic life, human health and wildlife. Indiana currently does not have any narrative standards specifically designed to prevent the contamination of sediments.

2. Applicable Rule Cite(s)

N/A

3. Existing Guidance

USEPA Water Quality Standards Handbook: Second Edition, 1994

4. Point of Contact

David Kallander

D. Aquatic life, human health and wildlife numeric criteria and values

1. Concise Issue Description

Indiana currently has numeric criteria for various pollutants inside and outside the Great Lakes Basin. Outside the Great Lakes Basin Indiana has numeric criteria for aquatic life and human health that were adopted into Indiana's rules in 1990. Inside the Great Lakes Basin Indiana has numeric criteria for aquatic life, human health and wildlife that were adopted during the Great Lakes Water Quality Guidance rulemaking. The criteria inside and outside the basin need to be evaluated based on current science.

2. Applicable Rule Cite(s)

327 IAC 2-1-6

327 IAC 2-1.5-8

3. Existing Guidance

EPA national numeric criteria documents

Great Lakes Water Quality Initiative Criteria Documents for the Protection of Aquatic Life in Ambient Water

Great Lakes Water Quality Initiative Criteria Documents for the Protection of Human Health

Great Lakes Water Quality Initiative Criteria Documents for the Protection of Wildlife

4. Point of Contact

David Kallander

E. Methodologies for calculating aquatic life criteria and values

1. Concise Issue Description

Aquatic life criteria protect aquatic organisms from harmful effects from exposure to toxic pollutants. Aquatic life criteria are divided into acute criteria that protect aquatic organisms from short-term exposure to high concentrations, and chronic criteria that protect against lifetime exposure at low concentrations. Aquatic life criteria are developed using toxicity data from published and unpublished toxicity studies. Indiana currently uses different methodologies for calculating aquatic life criteria and values for areas inside and outside the Great Lakes Basin.

2. Applicable Rule Cite(s)

327 IAC 2-1-8.2
327 IAC 2-1-8.3
327 IAC 2-1.5-11
327 IAC 2-1.5-12

3. Existing Guidance

Guidelines for deriving numerical national water quality criteria for the protection of aquatic organisms and their uses, USEPA 1985
Great Lakes Water Quality Guidance, USEPA 1993

4. Point of Contact

David Kallander

F. Methodologies for calculating human health criteria and values

1. Concise Issue Description

Indiana water rules currently contain methodologies for calculating human health water quality criteria for carcinogenic substances and noncarcinogenic substances. The human health criteria are calculated using a variety of information including the toxicity of the substance, and the amount of water and fish consumed daily by a person.

Indiana currently uses two different methodologies for calculating human health criteria. Areas inside the Great Lakes Basin use the methodology proposed in the Great Lakes Water Quality Guidance. Areas outside the basin use the methodologies adopted into Indiana rules in 1990. In 2000, EPA released new national human health methodologies. These methodologies are similar to Indiana's Great Lakes Basin methodologies but contain some differences.

The Great Lakes Water Quality Guidance adopted by IDEM in 1996 contained a new fish consumption level of 15 g/day (previously, the national fish consumption level was 6.5 g/day). During the Great Lakes Initiative rulemaking, the environmental and business groups both expressed a desire to see IDEM conduct

its own fish consumption study for Indiana. Indiana contracted with Purdue University and a fish consumption study was conducted. The data are available for calculation of a new fish consumption value for Indiana.

2. Applicable Rule Cite(s)

327 IAC 2-1-8.5
327 IAC 2-1-8.6
327 IAC 2-1-8.7
327 IAC 2-1.5-13
327 IAC 2-1.5-14

3. Existing Guidance

Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health USEPA 2000
Great Lakes Water Quality Initiative Technical Support Document for Human Health Criteria and Values

4. Point of Contact

David Kallander

G. Methodologies for calculating wildlife criteria and values

1. Concise Issue Description

Indiana water rules currently have two methodologies for the protection of wildlife from waterborne pollutants. The methodologies for areas outside the Great Lakes Basin were adopted in 1990. Indiana has rarely used these wildlife methodologies to develop any criteria because the Terrestrial Life Cycle Safe Concentration (TLSC) methodologies lack several of the parameters found in Indiana's human health methodology which would result in criteria that were less stringent than criteria generated from the human health methodologies. Areas inside the Great Lakes Basin use the methodology proposed in the Great Lakes Water Quality Guidance. The methodologies inside and outside the basin differ significantly.

2. Applicable Rule Cite(s)

327 IAC 2-1-8.4
327 IAC 2-1.5-15

3. Existing Guidance

4. Point of Contact

David Kallander

H. Site specific modifications to criteria and values

1. Concise Issue Description

In some instances it is necessary to develop water quality criteria or values which reflect specific, local environmental conditions. If local environmental conditions vary significantly from the conditions under which the toxicity tests that were used to develop the state criteria or values were conducted or the species at the site differ considerably from those used in the toxicity studies, the resulting criteria or values may be either overly stringent or under-protective of aquatic life, human health or wildlife. Therefore, EPA has developed methodologies to modify criteria or values on a site-specific basis. Indiana has specific methodologies for developing site specific criteria and values for aquatic life, human health, and wildlife inside the Great Lakes Basin. However outside the basin site specific criteria methodologies for aquatic life are less clearly defined and there are no provisions for developing site specific human health or wildlife criteria.

2. Applicable Rule Cite(s)

327 IAC 2-1-6

327 IAC 2-1.5-16

3. Existing Guidance

USEPA Water Quality Standards Handbook: Second Edition, 1994

4. Point of Contact

David Kallander

I. Dissolved metals

1. Concise Issue Description

In 1993, EPA released a memorandum recommending that dissolved metal concentrations be used to determine compliance with state water quality standards instead of total recoverable metal concentrations. Indiana rules currently allow dissolved metal concentrations to be used to set and measure compliance with

water quality standards in the Great Lakes Basin. Outside of the basin, the criteria defined as acid soluble metals, but are applied as total or total recoverable metals as there is no approved methodology for analyzing for acid soluble metals. EPA is not planning to approve an acid soluble metal analytical method.

2. Applicable Rule Cite(s)

327 IAC 2-1-6(a)(3)
327 IAC 2-1.5-8
327 IAC 2-1.5-11(b)(4)

3. Existing guidance

USEPA Water Quality Standards Handbook: Second Edition, 1994

4. Point of Contact

David Kallander

J. Free cyanide

1. Concise Issue Description

Since it has been determined that most of the toxicity attributable to cyanide is due to free cyanide (rather than cyanide which is bound to other substances), EPA has decided that free cyanide should be used to set and measure compliance with water quality standards. Measurement of free cyanide would include only hydrogen cyanide or cyanide in its ionized form. Any cyanide that is bound to metals or other particulates would not be considered when determining compliance with standards. Although EPA proposed the use of free cyanide for setting and measuring compliance in the 1980s, there were no approved methods for measuring free cyanide at that time. Indiana currently uses free cyanide inside the Great lakes Basin however there are no provisions for using free cyanide outside the basin.

2. Applicable Rule Cite(s)

327 IAC 2-1-6
327 IAC 2-1.5-8

3. Existing Guidance

N/A

4. Point of Contact

David Kallander

K. Bioaccumulative Chemicals of Concern (BCCs)

1. Concise Issue Description

As part of the Great Lakes Water Quality Guidance (GLWQG), EPA proposed a new definition of a bioaccumulative chemical of concern (BCC). This definition of a BCC is currently in Indiana rules for waters inside the Great Lakes Basin. For waters outside of the basin, there is a list of substances in Table 1 of 327 IAC 2-1-6 that were previously identified as BCCs during the 1990 rulemaking. This list of BCCs differs in many respects to the list that was presented by EPA in the guidance.

2. Applicable Rule Cite(s)

327 IAC 2-1-6
327 IAC 2-1.5-8

3. Existing Guidance

Great Lakes Water Quality Guidance, USEPA 1993

4. Point of Contact

David Kallander

L. 1999 Ammonia Criteria

1. Concise Issue Description

In 1999 EPA released a new ammonia criteria guidance document. The criteria are significantly higher than criteria previously released by EPA. Outside the basin Indiana currently uses a narrative criterion for ammonia except in cold water streams which have numeric ammonia criteria. Areas inside the Great Lakes Basin use the numeric ammonia criteria proposed in the Great Lakes Water Quality Guidance.

2. Applicable Rule Cite(s)

327 IAC 2-1-6(b)(5)
327 IAC 2-1.5-8(c)(5)

3. Existing Guidance

1999 Update of Ambient Water Quality Criteria for Ammonia

4. Point of Contact

David Kallander

M. Additivity

1. Concise Issue Description

Water quality standards have traditionally been focused on protecting human health, aquatic life and wildlife from single pollutants. However, most instances of environmental contamination involve mixtures of two or more different compounds. Chemicals in mixtures can interact with each other in such a way that their impact on organisms that encounter the pollutants may be different than it would be if the chemicals were encountered individually. The Great Lakes Basin rules contain provisions to address the additive effects of pollutants: Toxicity Equivalency Factors and a requirement that risks from carcinogenic substances should be considered additive (resulting in lower limits for discharges containing multiple carcinogenic pollutants). Areas outside the basin have no rules concerning the cumulative impacts of mixtures of pollutants to public health.

2. Applicable Rule Cite(s)

327 IAC 5-2-11.4(a)(4)

3. Existing Guidance

Water Quality Guidance for the Great Lakes System: Supplementary Information Document (SID)
Guidelines for the Health Risk Assessment of Chemical Mixtures, USEPA 1986
Guidelines for Carcinogen Risk Assessment, USEPA 1999 draft

4. Point of Contact

David Kallander or Lonnie Brumfield

III.E.Coli

A. Issues:

1. E.Coli - Seasonal Vs. Year Round Disinfection

Indiana currently requires wastewater treatment facilities to disinfect their waste water effluents only during the "recreational season" defined as the months of April through October. Our e.coli criteria only apply during those time of the year also. The one current exception is for dischargers on the Ohio River where

ORSANCO requirements are such that year round disinfection is required. Historically, E.coli and other fecal coliforms were thought to have a very limited ability to survive outside the intestinal tract once they were released into the environment. Thus, the seasonal disinfection requirements were thought to be protective of human health during the recreational season and also would not result in impacts during the recreational season from the periods when disinfection was not occurring. Recent studies from Purdue University and other researchers have indicated that E.coli may have a much more extended life span in the environment than previously thought raising questions as to whether this standard needs to be revised.

2. E.coli – Options for daily max, monthly average and/or monthly percentage

US EPA has recently issued draft guidance - *Implementation Guidance for Ambient Water Quality Criteria for Bacteria* issued in May 2002 allows for the states to be flexible regarding regulatory monitoring for e.coli. The current water quality standards establish numeric standards that e.coli shall not exceed 125 colonies/100 ml as a geometric mean based on not less than 5 samples equally spaced over a thirty day period nor 235 colinoies/100 mil in any one sample and monitoring frequencies of the collection of a minimum of five samples equally spaced over a 30 day period for a geometric mean and once a day for the daily maximum.

3. E.coli – Should Best Available Technology limits be established

Technology based treatment requirements represent the minimum level of treatment required for industrial/municipal point sources based on currently available treatment technologies. OWQ currently ensures compliance with the bacteriological requirements of 327 IAC 2-1-6(d) through the application of water quality-based effluent limits (WQBEL's) for *E. coli* during the recreational season. Currently, minor municipal facilities that disinfect with chlorine or bromine, or facilities designed for the natural attrition of bacteria (waste stabilization lagoons) are granted a waiver from *E. coli* limits. All other municipalities and industries discharging sanitary wastewater are subject to a monthly average limit of 125 count/100ml and a daily maximum limit of 235 count/ml for the months of April through November.

4. Should application of the e.coli criteria be the same throughout the state

Currently, the e.coli criteria is applied at the end of the pipe in the Great Lakes portion of the state. Downstate, based on a recent court ruling, the e.coli criteria allows for consideration of assimilative capacity whereby IDEM models the receiving stream to determine if the receiving stream has assimilative capacity based on the Q7, 10 with the criteria applying at the edge of the mixing zone.

5. Should standards for standards for E.Coli, ammonia and others pollutants be established for Waste stabilization lagoons

In the past, OWQ has granted a waiver from *E. coli* limits to minor municipal WWTP's whose treatment consists of a waste stabilization lagoon (WSL) system. The waiver was based on 327 IAC 5-10-6(a), where disinfection is not required for multi celled waste stabilization ponds. 10 state standards defines waste stabilization ponds as those systems having a retention time greater than 90 days. The assumption in the past has been that waste stabilization ponds with greater than 90 days retention time are adequately designed for the natural attrition of bacteria. For the past 18 to 24 months, municipal permits for WSL's have been written to include reporting requirements for *E. coli*. The intent of the reporting requirement is to accumulate sufficient data to perform an RPE analysis on *E. coli* with the subsequent renewal of the permit. Current evidence (both national studies and accumulated effluent data from WSL's) does not support the assumption that a 90 retention period is sufficient to ensure a natural attrition of bacteria. An automatic waiver is also inconsistent with OWQ's current RPE policy in the non-GLI area and with the RPE rule in the GLI area. Application of *E. coli* limits in permits for WSL's will likely present a variety of challenges to smaller dischargers.

6. Full body contact designation – Should different risk levels/different criteria be applied to various types of waters

EPA's new Draft Guidance issued in May 2002, on Implementation of the 1986 Bacteriological Criteria allows states to select different risk levels for protection of human health as a result of recreational activities. This guidance indicates that states can choose risk levels between 8 and 14 illnesses per 100 swimmers and still consider this a full body contact recreation use. This would mean that states could assign different risk levels to different bodies of water while maintaining the use designation of full body contact.

B. Applicable Rule Cite(s)

327 IAC 2-1-3(a)(1), 327 IAC 2-1.5-5(a)
327 IAC 2-1-6(d), 327 IAC 2-1.5-8(e)
327 IAC 5-2-13
327 IAC 5-2-11.4(d)(2)
327 IAC 5-5-2(b)
327 IAC 5-5-2(h)(2)
327 IAC 5-10-6(a)

C. Existing Guidance

May 2002 draft *Implementation Guidance for Ambient Water Quality Criteria for Bacteria*
EPA's April 1994 *Revised Terms of Environment - Glossary, Abbreviations and Acronyms*

D. Point of Contact

Mary Ellen Gray

IV. Mercury Variance

A. Concise Issue Description

Mercury is a toxic metal that has high bioconcentration and bioaccumulation rates. Mercury is the major cause of the issuance of fish consumption advisories in Indiana. EPA developed a new mercury analytical method (Method 1631) in 1999 that can measure the concentration of mercury at a level below Indiana's aquatic life, human health, and wildlife water quality criteria. Until this new method became available, laboratory analysis could only measure mercury at a level well above these water quality criteria.

According to recent fish tissue and in-stream water quality analytical information, the concentration of mercury that exists in many of Indiana's surface waters exceeds water quality criteria. All of Indiana's surface waters are under fish consumption advisories because the level of mercury in fish tissue exceeds the FDA's Action Level of 1 mg/kg.

Prior to the existence of the EPA's Method 1631, OWQ was not able to realistically implement compliance requirements with very low-level mercury limitations because the analytical methods that existed then were not capable of measuring to the level of the limitations. Therefore, mercury permitting was not properly addressed in NPDES permits for many years. The reduction of mercury in the environment has become an important IDEM priority. Now that the new mercury method is available, OWQ will be able to further contribute to the mercury reduction efforts of the agency.

Information available within Indiana and nationally suggests that a significant number of wastewater discharges may require water quality-based effluent limits (WQBELs) for mercury. Experience in other States suggests that mercury pollution minimization efforts may have a certain amount of effectiveness but also suggests that such efforts may not be enough to meet the most stringent mercury WQBELs. It also appears that the number of facilities that will need mercury limitations will increase significantly. For example, there are approximately 30 facilities with permits that contain mercury limitations or monitoring requirements. It is possible that between 180 to 1,300 facilities may eventually need mercury limitations. OWQ believes that many of these facilities

will not be able to comply with their mercury limits. The compliance problem is based on the lack of economically viable end-of-pipe treatment options and the ubiquitousness of mercury in the environment.

One legal mechanism available to NPDES permit holders that would provide some relief from being in non-compliance is to be granted a variance from the mercury WQBEL. However, the variance process is laborious and time consuming for the facility, the interested public, and OWQ. OWQ believes that the current variance process, with regard to mercury, will burden the NPDES permitting program to an eventual, significant reduction of permits being issued. Therefore, the solution is to make available to affected permittees a streamlined process for them to obtain a state-wide mercury variance. EPA's Region V has been receptive to this approach.

The goal of this aspect of the rulemaking is to revise the variance rules to provide a state-wide mercury variance that includes pollution minimization requirements to facilitate compliance for affected facilities. IDEM is expected to be completed with the rulemaking by the end of 2004 (it is top priority for OWQ to achieve this goal). The state-wide variance is envisioned to require the permittee to submit to the commissioner an application for a variance that includes:

- A certification that the discharger intends to be subject to the terms of the state-wide variance.
- A description of measures taken to date for mercury reduction or elimination.
- A plan of study for the identification and evaluation of potential mercury sources and potential methods for reducing and/or eliminating mercury from the permittee's effluent (i.e. pollution minimization).
- An explanation of the permittee's basis for concluding that there are no readily available means of complying with the mercury WQBEL without construction of end-of-pipe controls.

Due to the high priority placed on this rulemaking, a First Notice of Rulemaking for "Development of a New Rule Concerning Statewide Mercury Variance" was published in the June 1, 2002, Indiana Register.

B. Applicable Rule Cite(s)

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-14-8-8; IC 13-14-8-9; IC 13-14-8-10; IC13-18-3-1; IC 13-18-3-3

Affected: IC 13-18-3; IC 13-18-4

C. Existing Guidance

N/A

D. Point of Contact

Jon C. Mangles

V. Total Dissolved Solids (TDS) Variance

A. Concise Issue Description

TDS comprise inorganic salts, minerals and metals along with small amounts of organic matter that dissolve in water. TDS, chlorides, fluorides or sulfates in surface waters originate from natural sources, the discharge of treated wastewater from sewage treatment plants, chloride-based water softeners, urban run-off and industrial wastewater. Also, salts utilized for road de-icing contribute to the TDS content in surface water. Chlorides, sulfates, and fluorides are sub-fractions of TDS.

While sodium chloride is by the far the most common chloride, the chlorides of potassium, calcium and magnesium are generally more acutely toxic to aquatic life. Calcium chloride, for example, disrupts the balance of ions in a marine system by the continued addition of chloride ions. The principal drawback of chloride to a biological-type wastewater treatment system is that it will begin to inhibit nitrification at 180 mg/l and anaerobic digestion at 20,000 mg/l. In general, most forms of chlorides, fluorides, sulfates and other components of TDS are essentially considered pass thru agents. That is, conventional biological treatment systems do not remove TDS in significant amounts. Consequently, requiring the removal of TDS, chlorides, fluorides or sulfates from wastewater is costly and generates a concentrated brine waste that has its own disposal problems.

In the **Great Lakes** portion of Indiana, chlorides has an acute aquatic life criterion of 860 mg/l and a chronic aquatic life criterion of 230 mg/l. In surface water, at the point it is withdrawn for treatment for a public water supply, the concentrations of either chlorides or sulfates cannot exceed 250 mg/l unless it is due to naturally occurring sources. Surface water, at the point it is withdrawn for industrial use, cannot exceed 750 mg/l for TDS, unless it is due to naturally occurring sources. For the open waters of Lake Michigan, chlorides has an acute aquatic life criterion of 860 mg/l and a chronic aquatic life criterion of 230 mg/l, sulfates cannot exceed 250 mg/l, TDS cannot exceed 750 mg/l and fluorides cannot exceed 1 mg/l.

In the **non-Great Lakes** portion of Indiana, chlorides has an acute aquatic life criterion of 860 mg/l and a chronic aquatic life criterion of 230 mg/l, TDS cannot exceed 750 mg/l, sulfates cannot exceed 250 mg/l and fluorides cannot exceed 2 mg/l.

A handful of wastewater treatment facilities currently have either limitation or monitoring requirements for TDS, chlorides, fluorides and sulfates out of concern for protection of aquatic life or due identifiable industrial contributors to their wastestreams. Most of these treatment plants have not been able to consistently comply with their limits.

The goal of this aspect of the rulemaking is to revise the variance rules to provide a state-wide variance for TDS and chlorides (and possibly for fluorides and sulfates) that includes pollution minimization requirements to facilitate compliance for affected facilities. IDEM is expected to be completed with the rulemaking by the end of 2004. The state-wide variance is envisioned to require the permittee to submit to the commissioner an application for a variance that includes:

- A certification that the discharger intends to be subject to the terms of the state-wide variance.
- A description of measures taken to date for TDS reduction or elimination.
- A plan of study for the identification and evaluation of potential TDS sources and potential methods for reducing and/or eliminating TDS from the permittee's effluent (i.e. pollution minimization).
- An explanation of the permittee's basis for concluding that there are no readily available means of complying with the TDS, and applicable TDS sub-fraction WQBELs without construction of end-of-pipe controls.

B. Applicable Rule Cite(s)

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-14-8-8; IC 13-14-8-9; IC 13-14-8-10; IC13-18-3-1; IC 13-18-3-3

Affected: IC 13-18-3; IC 13-18-4

C. Existing Guidance

N/A

D. Point of Contact

Jon C. Mangles

VI. Implementation

A. Small Sanitary Dischargers

1. Concise Issue Description

All discharges from continuous discharge sanitary wastewater treatment facilities with a design flow of 0.05 million gallons (50,000 gallons) per day or less (which are not lake or sinkhole dischargers) are regulated under the rule cited below. This rule establishes default effluent limitations on CBOD₅, TSS, DO, and ammonia based on the ratio of the discharge volume to the Q_{7,10} stream flow volume. By containing a default limitation, wasteload allocation studies do not need to be performed which reduces the staff time needed to prepare an NPDES permit.

IDEM is interested in expanding coverage of this rule provision to sanitary wastewater treatment facilities with a larger design flow, perhaps up to 1 million gallons per day.

2. Applicable Rule Cite(s):

327 IAC 5-10-5

3. Existing Guidance

N/A

4. Point of Contact

Lonnie Brumfield

B. Intake Pollutants

1. Concise Issue Description

IDEM has a Memorandum of Agreement (MOA), date August 4, 2000, with EPA that requires IDEM to not issue any permits allowing intake credits where the once-through non-contact cooling water intake and outfall points are located on different bodies of water.

IDEM needs to revised this rule provision to comply with EPA's MOA.

Question: Should this rule provision be implemented state-wide?

2. Applicable Rule Cite(s)

327 IAC 5-2-11.5(g)

3. Existing Guidance

The MOA.

4. Point of Contact

Lonnie Brumfield

C. Averaging LOQ Values

1. Concise Issue Description

NPDES permits usually contain monthly average limitations. Additionally, municipal-type permits contain weekly average limitations for CBOD₅ and TSS. An averaging problem occurs when a permittee has effluent data that contains values less than the limit of quantitation (LOQ). The Great Lakes rule cited below contains a provision that states that values less than the LOQ may be assigned a value of zero (0). This provision also mentions the use of appropriate statistical techniques when a value other than zero (0) is warranted.

Question: Should the Great Lakes rule provision be applied state-wide?

Question: Should the rule spell out a statistical technique that should be used, but also allow other IDEM approved techniques to be used?

2. Applicable Rule Cite(s)

327 IAC 5-2-11.6(h)(3)

3. Existing Guidance

N/A

4. Point of Contact

Lonnie Brumfield

D. Mass and Concentration Limits

1. Concise Issue Description

The non-Great Lakes rule provision requires an NPDES permit to contain mass limits unless the pollutant cannot be appropriately expressed by mass (such as, pH, temperature) or effluent guideline limitations, standards, or prohibitions that are expressed in terms other than mass, such as concentration levels. In other words, a permit limit is not required to be expressed as both a concentration value and a mass loading rate. IDEM's current practice is to include both a concentration value and a mass loading rate when limiting a pollutant, in most

permits. Exceptions to this practice are included in the general permits 327 IAC 15-6 through 12 which do not contain mass limits.

The Great Lakes rule provision requires a water quality-based effluent limit in an NPDES permit to be expressed as both a concentration value and a mass loading rate, unless the pollutant cannot be appropriately expressed by mass (such as, pH, temperature).

Question: Should the mass provision for the non-Great Lakes part of Indiana remain as it is or should the Great Lakes rule provision be applied state-wide?

2. Applicable Rule Cite(s)

327 IAC 5-2-11(e)
327 IAC 5-2-11.6(g)

3. Existing Guidance

None (or none needed). A policy decision is needed.

4. Point of Contact

Lonnie Brumfield

E. Mixing Zones

1. Concise Issue Description

IDEM allows for a reasonable volume of stream flow to be used as a mixing zone when calculating water quality-based effluent limits (WQBELs). In the non-Great Lakes part of Indiana, IDEM uses a default mixing zone of 50% of the seven-day, ten-year low flow (Q_{7,10}) to protect aquatic life from the chronic effects of pollutants. In the Great Lakes part of Indiana, IDEM uses a default mixing zone of 25%.

Question: Should IDEM adopt the Great Lakes default mixing zone percentage for the non-Great Lakes part of Indiana?

2. Applicable Rule Cite(s)

327 IAC 2-1-4(c) - non-Great Lakes rule
327 IAC 5-2-11.4(b)(3) - Great Lakes rule

3. Existing Guidance

None

4. Point of Contact

Lonnie Brumfield

F. Pollutant Minimization Programs

1. Concise Issue Description

In the Great Lakes part of Indiana, a permittee is required to develop and implement a pollutant minimization program when the water quality-based effluent limitation (WQBEL) for a pollutant is less than the limit of quantitation (LOQ).

Question: Should this Great Lakes provision be applied state-wide?

2. Applicable Rule Cite(s)

327 IAC 5-2-11.6(h)(7) – Great Lakes

3. Existing Guidance

None

4. Point of Contact

Lonnie Brumfield

G. Reasonable Potential to Exceed (RPE)

1. Concise Issue Description

The Great Lakes rule cited below contains a procedure for OWQ staff to follow to determine if an effluent limit for a pollutant should be included in an NPDES permit. The non-Great Lakes rules do not include a similar procedure.

1) Question: Should the Great Lakes rule be expanded to apply to the whole state?

A strict interpretation of the RPE rule would/could leave out some pollutants that are commonly permitted. For example, RPE is only conducted on effluent water. If the effluent is treated and the treatment is effective, a pollutant may not show up as needing a limit because it is not present in the effluent at a level that the RPE would trigger as needing limit.

For instance, sanitary treatment systems do a very good job of removing ammonia. An RPE analysis on ammonia may not require a permit limit. But, since the treatment systems are specifically designed to remove ammonia, we believe that these types of systems should always have limits on ammonia.

- 2) The RPE rule should be modified to require NPDES permits for certain types of treatment systems to, at a minimum, always limit the pollutants the treatment systems have been designed to remove.

2. Applicable Rule Cite(s)

327 IAC 5-2-11.5

3. Existing Guidance

No specific guidance document exists for RPE. The above cited rule is written as if it were a guidance document.

4. Point of Contact

Lonnie Brumfield

H. Additivity

1. Concise Issue Description

The Great Lakes rule contains the concept of additivity. When a discharge contains more than one substance for which a human cancer criterion or human cancer value can be calculated, human health must be protected from the potential adverse additive effects of the mixtures of substances in the effluent.

Question: Should this concept be applied state-wide?

2. Applicable Rule Cite(s)

327 IAC 5-2-11.4(a)(4)(A)

3. Existing Guidance

The rule contains a clear procedure to follow.

4. Point of Contact

Lonnie Brumfield

I. Water Treatment Additives

1. Concise Issue Description

Some NPDES permittees condition their intake water to improve the use of the water in their operations. Many times, this conditioning is done by adding chemical compounds to the intake water prior to its being distributed. These compounds can be biocides and descalers.

Problem: Establishing permit conditions for water treatment additives is by best professional judgement. A rule provision needs to be added that specifically addresses permitting the pollutant or pollutants in these compounds.

2. Applicable Rule Cite(s)

None

3. Existing Guidance

Yes

4. Point of Contact

Lonnie Brumfield

J. Whole Effluent Toxicity Testing

1. Concise Issue Description

EPA over promulgated IDEM's whole effluent toxicity (WET) reasonable potential rule that is contained in the Great Lakes rules. IDEM implements EPA's WET reasonable potential requirements through the issuance of NPDES permits. The Great Lakes WET reasonable potential rule provisions will need to be revised to coincide with EPA's requirements.

Question: Should EPA's WET reasonable potential requirements be applied state-wide?

2. Applicable Rule Cite(s)

327 IAC 5-2-11.5(c)

3. Existing Guidance

Yes

4. Point of Contact

Lonnie Brumfield